

REMARKS

Status of the Claims

The present Amendment is being filed together with a Request for Continued Examination under 37 C.F.R. §1.114.

Claims 1-20 are pending in the application. Claims 10 and 11 previously have been withdrawn. By this Amendment, claim 1 is amended.

Further consideration of the claims respectfully is requested in view of the above amendments and the following remarks.

Summary of the Official Action

In the November 19, 2003, Official Action, claims 1-4, 9 and 12-20 were rejected under 35 U.S.C. 103(a), as unpatentable over U.S. Patent No. 5,905,633 (Shim), and claims 1-9 and 12-20 were rejected under 35 U.S.C. 103(a), as unpatentable over the Shim '633 patent in view of U.S. Patent No. 5,583,378 (Marrs).

Summary of the Decision on Appeal

In the July 19, 2005, Decision on Appeal, the Board of Patent Appeals and Interferences sustained the rejection of claims 1-9 and 12-20 over the Marrs '378 patent and the Shim '633 patent.

Claim Amendments

Claim 1 has been amended more clearly to recite various novel features of the claimed invention, with particular attention to the Board's comments in the Decision on Appeal. Support for the amendments may be found in the original application. No new matter has been added.

Claimed Invention

The present invention relates to a novel method of fabricating a semiconductor device. In one aspect, as recited in claim 1, the claimed invention relates to a method of fabricating a semiconductor device comprising (a) attaching a plurality of semiconductor chips to a tape; (b) cutting the tape to obtain individual semiconductor substrates after the step (a); and (c) providing a plurality of external terminals on each of the individual semiconductor substrates after the step (b), wherein the steps (a) and (b) are carried out in a reel-to-reel transport system.

Prior Art Distinguished

Applicant submits that the prior art fails to anticipate the claimed invention. Moreover, Applicant submits that there are differences between the subject matter sought to be patented and the prior art, such that the subject matter taken as a whole would not have been obvious to one of ordinary skill in the art at the time the invention was made.

The Marrs '378 patent relates to a ball grid array integrated circuit package with thermal conductor, and discloses a method of manufacturing ball grid arrays. However, Applicant submits that the Marrs '378 patent fails to disclose or suggest the above-discussed features of the claimed invention. In its Decision, although the Board recognized Applicant's argument that the Marrs '378 patent disclosure is directed to the assembly of individual ball grid array packages, and that the disclosed methods start with 9" x 12" panels that are not used in conjunction with a reel to reel transport system, the Board determined the Marrs '378 patent does teach that a reel to reel transport system may be used to manufacture ball grid arrays. Applicant submits that the Board's Decision then clearly recognizes that the above-discussed features of the claimed invention distinguish over the Marrs '378 patent.

Specifically, the Board determined that:

"Then, in the next column, column 10, the Marrs '378 patent describes a stage of production wherein panels comprise empty ball grid array package units and the panels are formed into **strips** of package units. The **strips** are punched or routed out of the panel (column 10, lines 15-17). Thereafter, the **strips**, comprising the package units, are cut out from the substrate. Once these **strips** are created, integrated circuit chips 'are wire bonded for electrical connection' (column 10, lines 22-23). Further, if solder balls are required, they are applied 'at this stage' (column 10, lines 26-27). Marrs goes on to state that **individual units 270G 'are then marked and punched out, thereby producing individual ball grid array packages 200 including integrated circuit chips 202 . . . in a cost effective and efficient manner, 'and this step is performed after the application of the external terminals, i.e., solder balls . . .'** (emphasis added).

Thus, as recognized in the Board's Decision, nowhere does the Marrs '378 patent disclose or suggest a method of fabricating a semiconductor device including the combination of steps of (a) attaching a plurality of semiconductor chips to a tape, (b) cutting the tape to obtain **individual semiconductor substrates** after the step (a), and (c) providing a plurality of external terminals on each of the individual semiconductor substrates after the step (b), as disclosed in the present application and recited in claim 1.

The Shim '633 patent relates to a ball grid array semiconductor package using a metal carrier ring as a heat spreader, and discloses a method of manufacturing ball grid array semiconductor packages. However, Applicant submits that the Shim '633 patent fails to disclose or suggest at least the above-discussed features of the claimed invention. In its Decision, the Board agreed with Applicant's arguments on appeal that the Shim '633 patent fails to obviate the claimed method of manufacturing a semiconductor device, and stated that the Shim '633 patent merely is cumulative to the Marrs '378 patent with respect to the claimed method. Applicant submits that the Marrs '378 patent is no more pertinent to the current/amended claimed method for manufacturing a semiconductor device. Nor is the

Marrs '378 patent believed to add anything to the Shim '633 patent that would make obvious the claimed invention.

For the above reasons, Applicant submits that claim 1 is allowable over the cited art.

Claims 2-9 and 12-20 depend from claim 1, and are believed allowable for the same reasons. Moreover, each of these dependent claims recites additional features in combination with the features of base claim 1, and is believed allowable in its own right. Individual consideration of the dependent claims respectfully is requested.

Conclusion

Applicant believes that the present Amendment is responsive to each of the points raised by the Examiner in the Official Action and by the Board of Patent Appeals and Interferences in the Decision on Appeal, and submits that the application is in condition for allowance. Favorable consideration of the claims and passage to issue of the present application at the Examiner's earliest convenience earnestly are solicited.

Should the Examiner believe that anything further would be desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact the Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Christopher Philip Wrist
Registration No. 32,078

JAO:CPW/eks

Attachment:
Request for Continued Examination

Date: September 16, 2005

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

| |
|---|
| <p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p> |
|---|